

ABSTRACT OF THE DISCLOSURE

An apparatus used in the medical industry, in order to increase transpulmonary pressure and respiratory volumes, to improve inspiratory muscle performance and re-establish the normal pulmonary hyperinflation, through the employment of electronic technology, providing audible, simulated, verbal, human sounding words, that assist, guide and prompt, increasing patient usage. In the past, lack of usage of this simple plastic, antiquated, disposable unit, by the patient, has contributed to severe problems, such as pneumonia. Without prompting, the patient finds it hard to inhale into a tube repetitively, to improve their lungs. Previous applications of prior equipment has been poor, thus adding intelligence in the form of electronic technology, which prompts without assistance, is a tremendous advantage in helping not only the sighted, but also the blind as well, since normally only written information accompanies the incentive spirometer, thus, changing the use of this medical device as we know it today.

converting said output signals into digital format to be stored and processed by the central processing unit, resulting in actions taken by the central processing unit under direction of it's digital program instructions in accordance to it's pre-determined set of actions,

3) said pre-determined actions of the digital program instructions include but not limited to the generation of audible audio sound sequences that provide information relating to said output signals,

4) said electronic sensors capable of measuring but not limited to parameters of performance of the human body in various settings relating to medical therapeutic performance, or physical training,

4a) said electronic sensors being comprised of, but not limited to, a resistor that forms a variable resistance to electric current flow, such as a film of carbon, but not limited to, that forms a resistance to electric current flow, in contact with said resistor,

5) said central processing unit capable of performing tasks as specified in the order defined in digital program, including, but not limited to processing of sensor output signals, execution of control functions defined by the digital program, providing actions in accordance to accurate time intervals, generation of audible sound,

6) said digital program defines control functions that implement therapy or physical rehabilitation regimes,

7) said digital program defining control functions that implement tasks for managing and conserving electrical power,

8) said digital program defining control functions that implement tasks for determining accurate intervals of time,

9) said digital program defining control functions that implement tasks for determining time of day, (for those medical apparatus that need to be turned on or off to begin or end therapeutic sessions),

10) said digital program defining control functions that implement tasks for communicating with a separate agent,

11) said digital program being stored in memory within the electronic module that contains the central processing unit, and or being stored in memory that is not within the

electronic module that contains the central processing unit but that is accessible by the central processing unit,

12) said digital audio sound data being stored in memory within the electronic module that contains the central processing unit, and or being stored in memory that is not within the electronic module that contains the central processing unit but that is accessible by the central processing unit,

13) directory table containing descriptive information about those commands, responses, measurements, or words as aforementioned about said digital audio sound data that is stored in memory within the electronic module that contains the central processing unit, or being stored in memory that is not within the same electronic module that contains the central processing unit but that is accessible by the central processing unit,

13a) said digital audio sound data being arranged into multiple units, each unit representing an audible verbal message comprised of a series of words as programmed per the requirements in synthesis with the medical apparatus's therapeutic use,

13b) a method for retrieving and generating the audible sound representing the digital audio data from the start of the message to the end of the message as corresponds to the therapeutic dialogue needed,

13c) a method for retrieving and generating the audible sound representing the digital audio data from an intermediate point in the message to a subsequent intermediate point in the same message, to allow the medical apparatus to respond to the measurements being produced by the patient accordingly and guide the patient according to the measurement amount,

14) said electronic module for generation of audible sound being the same electronic module that contains the central processing unit, and or a being separate electronic module for the module that contains the processing unit,

15) said electronic module for generation of audible sound including a module that converts digital audio data into continuous analog signal that is amplified to increase the signal power as needed to create audible sound from sound generating modules such as, but not limited to, speakers,

15a) said electronic modules for generation of audible sound providing a sound

generating a continuous analog signal that is one half the value of the maximum signal level, such level representing zero sound to be generated,

15b) said electronic module for generation of audible sound providing a sound generating module such, but not limited to, speaker(s) that is capable of receiving a level that is one half the maximum signal level in a way that produces no sound and consumes little or no power,

15c) said sound generating module such as, but not limited to, a speaker(s) whose reference signal level is set at one half the maximum signal level such that it produces no sound when it receives such a signal level,

15d) said sound generating module being provided a reference signal level set at on half the maximum signal level by connecting it between a series of batteries in a way that provides a reference signal that is exactly on half the signal level that is produced by the above said batteries connected in this way,

16) said digital program defining a method for determining the value of a sensor output signal, generating an audible verbal response according to a pre-determined set of controls and functions as described herein, in order to provide instructional information to the operator of whatever medical apparatus is being used for instructional information or guidance,

17) said digital program defining a set of pre-determined set of controls and functions relating sensor output signals to audible verbal commands, responses and measurements, comprises of improving medical conditions of the patient through the use of the said medical apparatus accordingly, along with the present invention.

ABSTRACT OF THE DISCLOSURE

An apparatus used in the medical industry, in order to increase transpulmonary pressure and respiratory volumes, to improve inspiratory muscle performance and re-establish the normal pulmonary hyperinflation, through the employment of electronic technology, providing audible, simulated, verbal, human sounding words, that assist, guide and prompt, increasing patient usage. In the past, lack of usage of this simple plastic, antiquated, disposable unit, by the patient, has contributed to severe problems, such as pneumonia. Without prompting, the patient finds it hard to inhale into a tube repetitively, to improve their lungs. Previous applications of prior equipment has been poor, thus adding intelligence in the form of electronic technology, which prompts without assistance, is a tremendous advantage in helping not only the sighted, but also the blind as well, since normally only written information accompanies the incentive spirometer, thus, changing the use of this medical device as we know it today.